Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/708,518	HARPER ET AL.
	Examiner	Art Unit	
	Hong C. Kim	2185	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>09 March 2004</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-20</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-20</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>3/9/04</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____.

        3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>3/9/04</u>.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

Detailed Action

1. Claims 1-20 are presented for examination. This office action is in response to the application filed on 3/9/2004.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 3/9/04 is being considered by the examiner.

The examiner requests, in response to this Office action, any reference(s) known to qualify as prior art under 35 U.S.C. sections 102 or 103 with respect to the invention as defined by the independent and dependent claims. That is, any prior art (including any products for sale) similar to the claimed invention that could reasonably be used in a 102 or 103 rejection. This request does not require applicant to perform a search. This **request** is not intended to interfere with or go beyond that **required** under 37 C.F.R. 1.56 or 1.105.

The request may be fulfilled by asking the attorney(s) of record handling prosecution and the inventor(s)/assignee for references qualifying as prior art. A simple statement that the query has been made and no prior art found is sufficient to fulfill the request. Otherwise, the fee and certification requirements of 37 CFR section 1.97 are waived for those documents submitted in reply to this request. This waiver extends only to those documents within the scope of this request that are included in the application's first complete communication responding to this requirement. Any supplemental replies subsequent to the first communication responding to this request and any information

disclosures beyond the scope of this are subject to the fee and certification

requirements of 37 CFR section 1.97.

In the event prior art documentation is submitted, a discussion of relevant

passages, figs. etc. with respect to the claims is requested. The examiner is looking for

specific references to 102/103 prior art that identify independent and dependent claim

limitations. Since applicant is most knowledgeable of the present invention and

submitted art, his/her discussion of the reference(s) with respect to the instant claims is

essential. **A response to this inquiry is greatly appreciated.**

The examiner also requests, in response to this Office action, support be

shown for language added to any original claims on amendment and any new claims.

That is, indicate support for newly added claim language by specifically pointing to

page(s) and line number(s), in the specification and/or drawing figure(s). This will assist

the examiner in prosecuting the application.

Claim Objections

3.   Claim 20 is objected to because of the following informalities: In line 1, it

appears that "18" should be changed to –19-- . Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4.   Claims 15-18 are rejected under 35 U.S.C. 101 because they are not in one of

the statutory classes of invention.

Applicant's inclusion of a method in an apparatus claim creates improper hybrid claim and hence this combination of claimed subject matter is non-statutory and confusing.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5.   Claims 1-20 are rejected under 35 U.S.C. 102(a) as being anticipated by Kahn et al. (Kahn) US Patent Pub. No. 2003/0126354.

As to claim 1, 15, 19 Kahn discloses a method for operating a memory controller (Fig. 1 Ref. 20), the method comprising: receiving a current memory access request from an agent (Fig. 1 Ref. 22); determining a page management policy associated with the agent in response to the receiving (block 7 and block 29 lines 5-15); setting the memory controller to the page management policy associated with the agent (block 29); executing the current memory access request on the memory controller (block 21, read/write operation); and transmitting results of the executing to the agent (bock 22, data is typically accessed and read on this limitation).

As to claim 2, Kahn discloses the invention as claimed above. Kahn further

discloses the page management policy is a page-open policy (blocks 7 and 29).

As to claim 3, Kahn discloses the invention as claimed above. Kahn further

discloses the page management policy is a page-close policy (blocks 7 and 29).

As to claim 4, Kahn discloses the invention as claimed above. Kahn further

discloses the current memory access request includes an agent type and the

determining is responsive to the agent type (block 29).

As to claim 5, Kahn discloses the invention as claimed above. Kahn further

discloses the agent type is a central processing unit or an input output adapter (Fig. 1

Ref. 10).

As to claim 6, Kahn discloses the invention as claimed above. Kahn further

discloses the current memory access request includes an agent workload type and the

determining is responsive to the agent workload type (block 29)

As to claim 7, Kahn discloses the invention as claimed above. Kahn further

discloses the current memory access request includes a unique identifier for the agent

and the determining is responsive to the unique identifier (block 29).

As to claim 8, Kahn discloses the invention as claimed above. Kahn further discloses the determining a page management policy includes: calculating a probability that a future memory access request by the agent will include access to a page accessed by the current memory access request; and using the probability to determine the page management policy (block 16).

As to claim 9, Kahn discloses the invention as claimed above. Kahn further discloses the calculating is based on a history of memory access patterns associated with the agent (block 16).

As to claim 10, Kahn discloses the invention as claimed above. Kahn further discloses the probability is calculated based on a number of prior sequential memory access requests by the agent to a common page divided by a total number of prior memory access requests by the agent in a specified time interval (block 16).

As to claim 11, Kahn discloses the invention as claimed above. Kahn further discloses the probability is calculated based on a number of prior sequential memory access requests by the agent to a common page (block 16).

As to claim 12, Kahn discloses the invention as claimed above. Kahn further discloses the determining results in a page management policy of page-open if the probability is greater than or equal to a threshold value and a page management policy

of page-close if the probability is less than the threshold value (block 29 trip point).

As to claim 13, Kahn discloses the invention as claimed above. Kahn further

discloses the determining results in the page management policy being dynamically

adapted based one or more prior memory accesses by the agent (blocks 16 and 29).

As to claim 14, Kahn discloses the invention as claimed above. Kahn further

discloses the setting the memory controller is performed dynamically in response to the

determining (blocks 16 and 29).

As to claim 16, Kahn discloses the invention as claimed above. Kahn further

discloses the memory bank includes one or more memory devices (Fig. 1).

As to claim 17, Kahn discloses the invention as claimed above. Kahn further

discloses the memory devices include one or more of dynamic random access memory,

extended data out dynamic random access memory and synchronous dynamic random

access memory (block 4).

As to claim 18, Kahn discloses the invention as claimed above. Kahn further

discloses the memory bank includes main memory (Fig. 1).

As to claim 20, Kahn discloses the invention as claimed above. Kahn further

discloses the determining a page management policy includes: calculating a probability

that a future memory access request by the agent will include access to a page

accessed by the current memory access request, wherein the calculating is based on a

history of memory access patterns associated with the agent; and using the probability

to determine the page management policy (blocks 16 and 29).

Conclusion

1.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.   See attached PTO-892.

2.   A shortened statutory period for response to this action is set to expire 3 (three)

months and 0 (zero) days from the mail date of this letter. Failure to respond within the

period for response will result in **ABANDONMENT** of the application (see 35 USC 133,

MPEP 710.02, 710.02(b)).

3.   When responding to the office action, Applicant is advised to clearly point out the

patentable novelty which he or she thinks the claims present in view of the state of the

art disclosed by the references cited or the objections made. He or she must also show

how the amendments avoid such references or objections.   See 37 C.F.R. ' 1.111(c).

4.   When responding to the office action, Applicants are advised to provide the

examiner with the line numbers and page numbers in the application and/or references

cited to assist examiner to locate the appropriate paragraphs.

5.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Hong Kim whose telephone number is (571) 272-4181.

The examiner can normally be reached on M-F 9:00 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Matt Kim can be reached on (571) 272-4182. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application should

be directed to the TC 2100 whose telephone number is (571) 272-2100.

6.   Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

7.   **Any response to this action should be mailed to:**

Commissioner of Patents
P.O. Box 1450

Alexandria, VA 22313-1450

or faxed to TC-2100:
571-273-8300

Hand-delivered responses should be brought to the Customer Service
Window (Randolph Building, 401 Dulany Street, Alexandria, VA 22314).

HK
Primary Patent Examiner
March 8, 2006